REMARKS

Claims 1-9, 11-17, and 19-20 are pending in the application. Responsive to the Office Action dated 18 April 2007, applicant has amended claims 1, 4, 5, 9 and 17, and cancelled claims 10 and 18 (shown in the Listing of Claims attached hereto) in order to more particularly and completely claim the present invention. No new matter has been introduced. Applicant respectfully requests reconsideration of the application in view of the foregoing amendments and following remarks.

Claim Rejections – 35 U.S.C. §101

Claims 4 and 5 have been rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. Claims 4 and 5 have been amended herein to clarify a tangible, real-world result. Support for the claim language may be found in, for example, paragraphs [0042] and [0045] of the present specification.

Further, the Office Action indicates that independent claim 1 meets the requirements of 35 U.S.C. §101. Since claims 4 and 5 depend, directly or indirectly, from independent claim 1 they include all the tangible, real-world results of claim 1. Therefore, applicant respectfully requests that the rejection under 35 U.S.C. §101 be withdrawn.

Claim Rejections – 35 U.S.C. §102

Claims 1-15 have been rejected under 35 U.S.C. §102(b) as being anticipated by Gouilloud (US 4,628,725).

Independent claim 1 has been amended to specify:

> *"determining the mud slowness from a high frequency asymptotic value of the fluid mode slowness."*

Support for the claim language may be found in paragraphs [0041] and [0042] of the present specification.

Considering what the prior art discloses, and turning first to the primary Gouilloud patent, this patent relates to the use of Stoneley waves for flow analysis of multi-phase fluids. Note the Abstract of the Gouilloud patent. The patent discloses that if the detected Stoneley wave energy falls below a threshold value, an instance of gas intrusion is signaled. Note column 11, lines 32-36 of Gouilloud.

As is known to persons skilled in the art, Stoneley waves propagate along a solid-fluid interface, such as along the walls of a fluid-filled borehole, and are the main low-frequency component of a signal generated by sonic sources in boreholes.

In contrast with the teaching of the Gouilloud patent, claim 1 specifies determining the mud slowness from a high frequency asymptotic value of the fluid mode slowness. Therefore, the frequency range of interest of independent claim 1, as amended herein, is not disclosed or suggested by the Gouilloud patent, which relates to the detection and use of Stoneley waves.

The Office Action indicates a connection between mud slowness and energy or velocity of Stoneley waves. Note the Office Action at page 3. However, since the high frequency specified in independent claim 1 is different from the low-frequency of Stoneley waves in the Gouilloud patent, claim 1 is not anticipated by the teaching in the Gouilloud patent.

The above discussion is similarly applicable to claims 2-4 and 6-8, which depend from independent claim 1.

Independent claim 9 has been amended to clarify that the mud slowness is determined from an asymptotic approach of the fluid mode slowness towards a limiting value in a high frequency region. Support for the claim language may be found in paragraphs [0041] and [0042] of the specification.

As discussed above, Stoneley waves propagate along a solid-fluid interface, such as along the walls of a fluid-filled borehole, and are the main low-frequency component of signals generated by sonic sources in boreholes. The Gouilloud patent does not disclose or suggest that mud slowness is determined from an asymptotic approach of the fluid mode slowness towards a limiting value in a high frequency region, as specified in independent claim 9.

The above discussion is also applicable to claims 11-15, which depend from independent claim 9.

Accordingly, applicant respectfully requests the Examiner to withdraw the rejections of claims 1-15.

Claim Rejections – 35 U.S.C. §103

Claims 16-20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Gouilloud in view of Rester (US 2002/0134587).

Independent claim 17 has been amended to clarify that the mud slowness is determined from an asymptotic approach of the fluid mode slowness towards a limiting value in a high frequency region. Support for the claim language may found in paragraphs [0041] and [0042] of the present specification.

For a claim to be obvious there must be a) a suggestion or motivation to combine reference teachings, b) reasonable expectation of success, and c) the reference must teach all of the claim limitations. In re Vaeck, 947 F.2d 488 (Fed. Cir. 1991). As discussed above, the Gouilloud patent does not disclose or suggest that mud slowness is determined from an asymptotic approach of the fluid mode slowness towards a limiting value in a high frequency region. Rester does not provide the elements that are missing from Gouilloud.

Claim 16, which depends from independent claim 9, should be allowable for at least the same reasons discussed above in connection with claim 9. Claims 19 and 20

depend from claim 17 and should be allowable for at least the same reasons as claim 17.

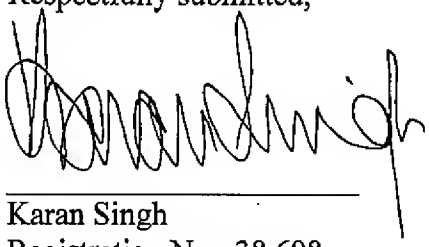
Accordingly, applicant respectfully requests the Examiner to withdraw the rejections of claims 16, 17 and 19-20.

Conclusion

In light of the above amendments and remarks, applicant believes that the present application and claims 1-9, 11-17 and 19-20 are in proper condition for allowance. Such allowance is earnestly requested.

In the event that any additional fees or credits are due owing to this response, the Commissioner is hereby authorized to charge the amount necessary to cover any fee that may be due or to credit any overpayment to Deposit Account 50-1122.

Respectfully submitted,



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